REMARKS

Favorable reconsideration and allowance of this application are requested.

The status of applicants' parent application has been updated in the specification. A title more commensurate with the subject matter claimed herein has also been presented.

By way of the amendment instructions above, claims 19-31 and 34 have been cancelled along with previously cancelled claims 1-18. Independent claim 32 has been further amended so as to incorporate definitions of (i) the proportions of the glyoxyldiureide, nitrogen-containing compound and antioxidant, based on prior claim 26 and (ii) the shaped article being a motor vehicle part, based on now cancelled claim 34. In addition, certain clarifying and editorial revisions have been proposed. For example, the term "the both" has been amended with to "a combination of the nitrogen-containing compound and the antioxidant", thereby obviating the Examiner's objection noted in paragraph 2 on page 2 of the action.

Claims 35-43 are new and are based substantively on prior claims 20-23, 25, and 27-30, respectively, but are dependent from the amended version of claim 32. The preamble expressions of such new claims has also been presented so as to be commensurate with the preamble expression of claim 32 from which such claims depend.

Thus, claims 32-33 and 35-43 are presently pending in this application for which favorable reconsideration is requested. As will become evident from the discussion which follows, all such pending claims are in condition for allowance over the applied references of record.

Claims 1, 20 and 23-34 attracted a rejection under 35 USC §102(b) as allegedly anticipated by, or rendered obvious under 35 USC §103(a) from JP-08-41288.[1]

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[1] USP 5,866,671 to Shinohara et al is being employed in the rejection as an English-translatoin of the JP '288 reference. The JP '288 reference and the USP '671 translation thereof will therefore be

Applicants suggest that the JP '288 reference does not anticipate or render obvious the invention as defined by the claims pending herein.

Shinohara et al disclose that the therein disclosed invention pertains to molded parts used for photographic sensitive materials and resin compositions used to make such parts as magazines which house photographic sensitive materials, such as photo-film and printing paper or springs and rollers that are used around the photographic sensitive materials (see paragraph [0001] of JP '288 and column 1, lines 7-12 of USP '671).

The objects of the Shnohara et al invention aims at making polyacetal resins that possess excellent characteristics in mechanical properties, heat resistance and fatigue resistance suitable to be a resin composition material to make molded parts used for photographic sensitive materials (see paragraph [0006] of JP '288 and column 1, lines 62-67 of USP '671).

Shinohara et al also discloses that the "concentration of formaldehyde gas generated from molded parts made of this type of polyacetal resins is extremely small and no chemical fogging due to reduction of silver halide emulsions can be seen. Also, since it is designed not to produce harmful chemicals that may negatively affect the photography, it is ideally suited to be used as a resin composition used to make molded parts for photographic sensitive materials." (see paragraph [0007] of JP '288 and column 2, lines 26-32 of USP '671, emphasis added).

The polyacetal resin composition is disclosed in Shinohara et al for a molded article for photographic photosensitive materials, which has 20 ppm or less concentration of formaldehyde generated from a molded article composed thereof in a closed container and which is prepared so as not to damage photographic properties (claim 1). In order to lower the concentration of formaldehyde gas liberated from polyacetal resin, Shinohara et al prefer to add to 100 weight parts of polyacetal resin 0.05-3.0 weight parts of a specific organic cyclic compound with active imino group (see paragraphs [0015]-[0020] of the JP '288 reference and column 3, line 43 to column 4, line 23 of the

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collectively referenced herein as "Shinohara et al", unless specific citations are intended, in which case each reference will be referenced separately as may be appropriate.

corresponding USP '671). Preferably, hydantoin compounds such as hydantoin, 5,5-dimethylhydantoin, 5,5-diphenylhydantoin and allantoin are disclosed for such purpose. (see paragraph [0020] of the JP '288 reference and column 4, lines 20-23 of USP '671). Among them, hydantoin and 5,5-dimethylhydantoin are employed in the Examples (paragraphs [0042] to [0044] and [0049] of the JP '288 reference and column 6, line 65 to column 7, line 11, and column 7, line 63 to column 8, line 3 of USP '671).

Moreover, to the acetal resin composition of Shinohara et al, one may add, if necceary, a lubricant, a light-shielding material, an antioxidant, a heat stabilizer (paragraph [0021] of the JP '288 reference and column 4, lines 12-27 of USP '671).

Regarding the antioxidant, the Shinohara et al reference discloses that:

> "[It] is desirable to add antioxidant to prevent thermal deterioration of the resin and to suppress the formation of fish-eyes and lumps (non-homogeneous lump breakdown). Hindered phenol type antioxidants are most preferred. (paragraph [0036] of the JP '288 reference and column 6, lines 14-17 of USP '671)....As to the amount of these hindered phenol type antioxidants to be added, 0.001-1.0 weight % is the range, preferably 0.005-0.8 weight %, more preferably 0.01-0.5 weight %, and most preferably 0.02-0.4 weight %." (paragraph [0039] of the JP '288 reference and column 6, lines 38-42 of USP '671)

Polyamide compounds are disclosed as the heat stabilizer of Shinohara et al, more concretely, polyamide 6, ethylene-vinyl alcohol copolymer, acrylamide (co)polymer (paragraph [0040] of the JP '288 reference and column 6, lines 44-53 of USP '671). The total amount of heat stabilizers to be added to the polyacetal resin composition is 0.5-5.0 weight parts to 100 weight parts of acetal resin (paragraph [0040] of the JP '288 reference and column 6, lines 53-57 of USP '671).

As to the measurement of formaldehyde, Shinohara et al disclose that:

> "The test pieces ... are placed and sealed, 5 pieces together (the total weight about 5 g), in a 1 L polyethylene container and allowed to stand at room temperature for 24 hours. Concentration of formaldehyde in the container was measured using Formalde Meter-Mark II (Lion Co. England) to the ppm level." (USP '671 at column 7, lines 26-31).[2]

According to Shinohara, since the polyacetal resin is prepared not to spoil photographic quality by maintaining concentration of formaldehyde generated in a closed vessel below 20 ppm, no chemical fogging takes place even if molded parts are used in the vicinity of photographic sensitive materials (paragraph [0061] of the JP '288 reference and column 9, lines 62-67 of USP '671).

Shinohara et al fail to disclose the specific combination of the glyoxyldiureide compound and the basic nitrogen-containing compound and/or antioxidant in the specific ratio in relation to a motor vehicle part as claimed herein.

Particularly, the resin composition of Shinohara is used for photographic sensitive materials. As such Shinohara intends to inhibit chemical fogging due to reduction of silver halide emulsions and to produce no harmful chemical that may negatively affect the photography. Such a photographic field is clearly different from a technical field of a motor vehicle part. Thus, one of ordinary skill in this art would never be motivated from Shinohara et al to employ the therein disclosed resin composition as a motor vehicle part.

Moreover, hydantoin or 5,5-dimethylhydantoin is used in the Examples of Shinohara et al as representing the best mode of the therein disclosed compositions. However, both of such disclosed hydantoins have only one cyclic urea unit. Namely,

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[2] It is noted that the total weight of the 5 pieces is described as "75g" in the JP '288 reference at paragraph [0046].

these hydantoins are clearly distinct from glyoxyldiureide which has one cyclic urea unit ***and*** one non-cyclic urea unit.

Applicants further note that Shinohara et al disclose using a polyamide compound as a heat stabilizer and teach the addition of an antioxidant. However, there is no concept of inhibiting formaldehyde emission by using a heat stabilizer and/or antioxidant. This is also apparent from the fact that (i) Shinohara et al deals with the heat stabilizer and antioxidant on the same basis or rank as other various additives including lubricants, light-shielding materials, plasticizers and fillers, and that (ii) according to Shinohara et al, the addition of the antioxidant prevents thermal deterioration of the resin and suppresses the formation of fish-eyes and lumps.

Thus, the specific combination of the glyoxyldiureide compound and the basic nitrogen-containing compound and/or antioxidant, particularly the ratio of these components, in relation to the inhibition of formaldehyde emission, specifically for a motor vehicle part, could not be ascertained from Shinohara et al. As such, the present invention is novel and unobvious over Shinohara et al.

The present invention also shows unexpectedly remarkable effects by the specific combination of claimed components. In this regard, as noted above, since Shinohara et al employ the hydantoins as discussed previously, the subject matter of Shinohara et al corresponds to the Comparative Examples 5, 6, 12 and 18 (using 5,5-dimethylhydantoin or hydantoin) of the present application. As demonstrated in such Comparative Examples, the formaldehyde emission thereof is compared with the formaldehyde emission of the Examples which embody the subject matter of the present invention. That is, Comparative Examples 5 and 6 containing an antioxidant are compared with the Examples 2-6. Comparative Example 12 using an antioxidant is compared with the Examples 9-13 and Comparative Example 18 using a nitrogen-containing compound is compared with the Example 19. Applicants further note that Comparative Example 16 comprising polyacetal resin and a basic nitrogen-containing compound is also compared with the Example 19. The effects of such Comparative Examples and Examples will be discussed in greater detail below.

It should be noted, however, that while Shinohara et al disclose the concentration

of formaldehyde generated from a formed object in a closed environment is less than 20ppm, the method and conditions for measuring the formaldehyde emission of Shinohara et al are clearly different from those employed in the present invention. Thus, the formaldehyde emission measured as concentrations (ppm) in the present application cannot be directly comparable with those described in Shinohara.

I. Effects of the combining glyoxyldiureide and antioxidant

(a) Formaldehyde emission from molten resin

As apparent from Table 1 on page 42 of the present application, formaldehyde emission in the Examples 2-6 is inhibited 30-106 times relative to Comparative Example 6 using 5,5-dimethylhydantoin. Moreover formaldehyde emission in the Examples 2-6 is inhibited 7-24.5 times relative to the Comparative Example 5 using an antioxidant and hydantoin.

(b) Formaldehyde emission in a dry environment

As shown in Table 2, formaldehyde Emission is 5.8 $\mu g/cm^2$ in Comparative Example 12 using 5,5-dimethylhydantoin. In contrast, the formaldehyde emissions are 0.1-0.3 $\mu g/cm^2$ and are inhibited, in Examples 9-13, 20-58 times relative to the Comparative Example 12.

(c) Formaldehyde emission in a humid environment

The formaldehyde emission in Comparative Example 12 is 8.6 $\mu g/cm^2$. That is, formaldehyde emission in Examples 9-13 corresponds to 14.3-21.5 times as much as that of Comparative Example 12.

II. Effects by the combination of glyoxyldiureide and nitrogen-containing compound (nitrogen-containing compound and antioxidant)

(a) Formaldehyde emission from molten resin

As apparent from Table 3 on page 46 of the description, formaldehyde emission in the Example 19 (6 ppm) is inhibited 24.2 times relative to Comparative Example 18 (145 ppm)

(Shinohara). Furthermore, comparing Example 19 with Comparative Example 16 (reference), formaldehyde emission in Example 19 is inhibited 12.8 times relative to Comparative Example 16 (77 ppm). That is, as apparent from the comparison of the Comparative Example 16 with the Comparative Example 18, addition of 5,5-dimethylhydantoin together with the nitrogen-containing compound increases the formaldehyde emission 1.9 times relative to use of a nitrogen-containing compound alone.

(b) Formaldehyde emission in a dry environment

Formaldehyde emission is 2.4 and 3.1 $\mu g/cm^2$ in Comparative Example 18 (Shinohara) and Comparative Example 16 (reference), respectively. According to Example 19, the formaldehyde emission (0.3 $\mu g/cm^2$) is inhibited 8.0 times and 10.3 times relative to Comparative Examples 18 and 16, respectively.

(c) Formaldehyde emission in a humid environment

Formaldehyde emission in Comparative Example 18 (Shinohara) and Comparative Example 16 (reference) is 7.2 and 3.4 $\mu g/cm^2$, respectively. Thus, formaldehyde emission in the Example 19 corresponds to 14.4 times and 6.8 times as much as that of Comparative Examples 18 and 16, respectively. Moreover, as apparent from the comparison of Comparative Example 16 with Comparative Example 18, addition of 5,5-dimethylhydantoin together with the nitrogen-containing compound increases the formaldehyde emission 2.1 times relative to use of the nitrogen-containing compound alone.

As the data demonstrates above, formaldehyde emission can be significantly inhibited in any environment (e.g., dry and humid environments and in a molten resin) according to the present invention in comparison with Shinohara et al. Thus, such unexpected effects of the present invention would never be predicted from Shinohara et al. As such, an ordinarily skilled person would not have arrived at the present invention with knowledge of Shinohara et al in hand.

Withdrawal of Shinohara et al as a reference against the present invention is therefore in order.

All issues outstanding in the official action having been addressed above, early receipt of the official allowance notice is solicited.

Respectfully submitted,

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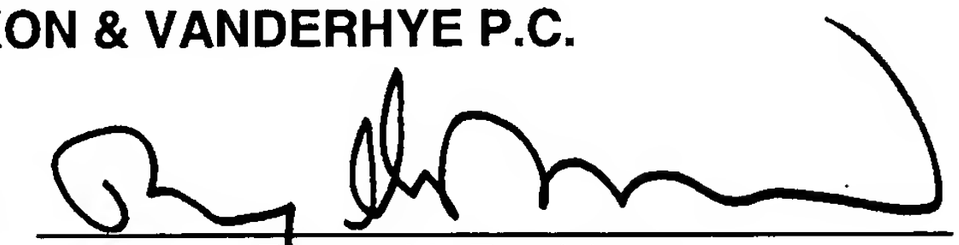
By: 

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